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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,058	04/19/2007	Kevin Francis Dolman	21503-0002US1	9663
26171 7590 12/30/2011 FISH & RICHARDSON P.C. (DC) P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER WASAFF, JOHN SAMUEL	
			ART UNIT 3742	PAPER NUMBER
			NOTIFICATION DATE 12/30/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary

Application No.

10/598,058

Applicant(s)

DOLMAN, KEVIN FRANCIS

Examiner

JOHN WASAFF

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1,3,5-9 and 12-26 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1,3,5-9 and 12-26 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-943)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 19-24 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. It is unclear if the steps recited in claim 19 are dependent on claim 1, or if applicant intends for claim 19 to be an independent claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 5-8, 12-24, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crook (GB 2039950 A) in view of Nayar (US Patent No. 3,862,840), and further in view of Dolman (WO 84/04760).
6. **Crook teaches:** producing a carbide-containing ferroalloy welding consumable material for subsequent use for producing a hardfacing on a suitable substrate (carbide-containing alloys for making hardfacing depositions on substrates, with the inclusion of iron in the alloy thereby forming a "ferroalloy"; abstract; p. 1, ln. 45-50; p. 1, ln. 55-60) comprising the steps of: melting

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at least two solid feed materials to form a homogenous melt (multiple feed materials mixed and melted evenly; p. 2, ln. 60-65), the homogenous melt having a required concentration of carbon, chromium, and manganese for a chromium carbide-containing ferroalloy welding consumable material (chromium, carbon, and manganese seen composition of hard alloy; p. 1, ln. 30-50); and forming a solid carbide-containing ferroalloy welding consumable material from the melt (molten alloy formed into powder, i.e., solid carbide-containing ferroalloy; p. 3, ln. 1-5);

forming the homogeneous melt with an iron-containing material other than a chromium-containing ferroalloy to dilute the chromium concentration in the melt (melt formed with iron; p. 1, ln. 45-50);

de-gassing the melt (melting takes place in protective atmosphere of inert gas, e.g., argon; p. 2, ln. 60-65) so that the solid ferroalloy welding consumable material facilitates a stable welding arc in a subsequent hardfacing operation and thereby minimizes porosity in the resultant hardfacing and eliminates ejection of ferroalloy powder from the weld pool (though not stated explicitly, inert gas capable of minimizing porosity);

the ferroalloy welding consumable material has chromium content in the range 30-65 % by weight, a chromium content of less than 35 % by weight (chromium 30-37 % by weight; p. 2, ln. 30-35);

casting the melt into a suitable mould and thereafter breaking up the cast product into a suitable form, such as powder form (molten alloy cast into mould, only to be broken into powder form; p. 3, ln. 1-5);

atomizing the melt with a suitable gas to form solid powder from the melt, the gas being argon (melt may be atomized with argon gas; from p. 2, ln. 65 to p. 3, ln. 5);

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forming a weld pool of the chromium carbide-containing ferroalloy welding consumable material and a welding wire material on a substrate and thereafter depositing a hardfacing weld deposit of material from the weld pool on the substrate (chromium carbide-containing ferroalloy welding consumable formed into wire and used for hardfacing; p. 3, ln. 10-20);

the weld deposit comprising boron up to a maximum of 15 % by weight (boron comprises 1 % by weight of weld; p. 1, ln. 45-50).

7. **Crook fails to teach:** at least one of the materials being a source of free carbon; having a chromium/carbon ratio less than 7.0; adding graphite to the melt to supersaturate the melt with carbon; holding a melt temperature to dissolve carbon in the melt; the ferroalloy welding consumable material has a combined carbon content greater than 7.5 % by weight.

8. **Nayar teaches:** a process for manufacture of hard and non-deformable alloys that adds free carbon in the form of graphite to the pre-alloy powder in order to increase the carbon ratio (addition of graphite increases carbon ratio beyond initial value, which results in supersaturating; col. 6, ln. 25-40 of Nayar). The alloy is then held at a melting temperature (col. 6, ln. 25-40 of Nayar).

9. **Dolman teaches:** a wear-resistant, high chromium white iron that contains carbon up to 9% by weight and chromium between 30 and 40 % by weight (i.e., resulting chromium/carbon ratio of less than 7; p. 6, ln. 6-11 of Dolman).

10. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Crook to include the features of Nayar and Dolman, in order to yield a higher strength weld deposit (col. 6, ln. 35-40 of Nayar) that also possesses high abrasion resistance combined with high fracture toughness (p. 5, ln. 5-10 of Dolman). Regarding the exact values of the range,

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it would have been obvious to one of ordinary skill in the art at the time of the invention to attain the desired values, since it has been held that when the general conditions are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crook, Nayar, and Dolman, and further in view of Scruggs (US Patent No. 5,695,825).

12. Crook, Nayar, and Dolman teach all the features as set forth above, but fail to teach a chromium-containing ferroalloy material.

Scruggs teaches a ferrous hard-facing material that comprises a pre-alloyed powder, or mixture of powders, that contains ferrochromium (i.e., chromium-containing ferroalloy material; col. 3, ln. 38-42 of Scruggs).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Crook, Nayar, and Dolman with Scruggs, since the source materials of Scruggs provide for a more dense, wear-resistant hardfacing surface (col. 2, ln. 50-55 of Scruggs).

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crook, Nayar, and Dolman, and further in view of Oberly et al. (US Patent No. 3,663,313).

14. Crook, Nayar, and Dolman teach all the features as set forth above, but does not teach removing slag from the melt.

Oberly teaches a welding flux composition that describes removing slag (col. 4, ln. 1-5).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize slag removal, since doing so provides for a weld deposit substantially free of defects (col. 1, ln. 15-25 of Oberly).

15. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crook, Nayar, and Dolman, and further in view of McKenna (US Patent No. 2,515,463).

16. Crook, Nayar, and Dolman teach all the features as set forth above, but fail to teach the iron-containing material is selected from the group consisting of scrap steel and scrap high chromium white cast iron.

McKenna teaches a process for making titanium carbide that includes adding steel scrap (col. 2, ln. 30-35 of McKenna).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Crook, Nayar, and Dolman with McKenna, since, as McKenna demonstrates, it is known in the art to use steel scrap instead of pure iron (col. 2, ln. 20-25 of McKenna).

Claim Rejections - 35 USC § 102/103

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 15 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Crook.

20. Crook teaches a chromium-carbide containing ferroalloy welding consumable material that includes a hardfacing weld deposit on a suitable substrate, the weld deposit being atomized with argon (see abstract; p. 1, ln. 45-50; p. 1, ln. 55-60; p. 3, ln. 1-5 of Crook).

Regarding the product-by-process aspect of the claims, although the product may be produced by a different process, the product appears to be the same. See *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

21. Claims 15 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hulsewig (US Patent No. 3,597,583).

22. Hulsewig teaches a chromium carbide-containing ferroalloy consumable material and a hardfacing weld deposit on a suitable substrate (consumable electrode that contains carbon and iron for making weld deposits that are resistant to rusting; see abstract, col. 2, ln. 45-55 of Hulsewig).

Regarding the product-by-process aspect of the claims, although the product may be produced by a different process, the product appears to be the same. See *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Response to Arguments

23. Applicant's arguments filed 10/11/11 have been fully considered but they are not persuasive. Applicant argues on p. 7/9 (applicant's numbering) that Crook is well above the claimed chromium/carbon ratio of less than 7.0. Applicant also argues that Crook's nickel-based alloy is different from the formed ferroalloy of claim 1. Examiner maintains that Crook, in combination with Nayar and Dolman, teaches the claimed features of claim 1. While Crook may not be identical in purpose to applicant's invention, the combination of references including Crook teaches all the claimed limitations.

24. Regarding the ratio of chromium/carbon, Examiner used the Dolman reference to show that such a ratio does exist. Applicant argues that one skilled in the art would not look to Dolman for the claimed ratio; however, examiner maintains that alloy described by Dolman is related art that describes a chromium/carbon ratio in the context of abrasion resistance, i.e., making a surface tougher.

25. Applicant also argues that Nayar fails to describe or suggest adding free carbon in a method with the claimed chromium/carbon ratio. Such an analysis amounts to piecemeal interpretation of the references. Examiner relied on Crook, Nayar, and Dolman to show such features, in addition to the statement regarding the obviousness of ranges (see rejection above).

26. Lastly, applicant argues that the section 102/103 rejections do not apply. Examiner reminds applicant that in a product claim, the product, and not the process, differentiates the claimed invention from the prior art. In claims 15 and 20, applicant has claimed what amounts to a chromium carbide-containing ferroalloy consumable material, and a hardfacing weld deposit. For these reasons, applicant's arguments are not persuasive.

Conclusion

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN WASAFF whose telephone number is (571)270-1283. The examiner can normally be reached on Monday through Friday, 8:30am to 6:00pm, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN WASAFF/
Examiner, Art Unit 3742
12/21/11

/Henry Yuen/
Supervisory Patent Examiner, Art Unit
3742